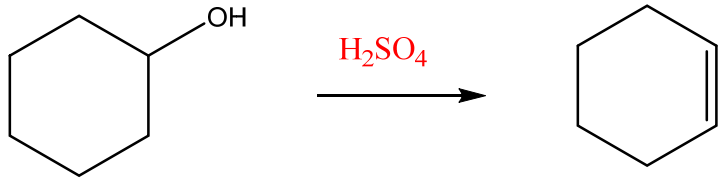
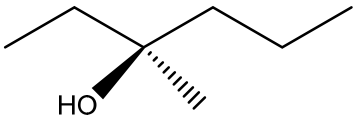
Discussion Worksheet #9
Partial Answers
Acid/Base Reactions of Alcohols

Skill 1: Mechanisms of acid/base reactions of alcohols

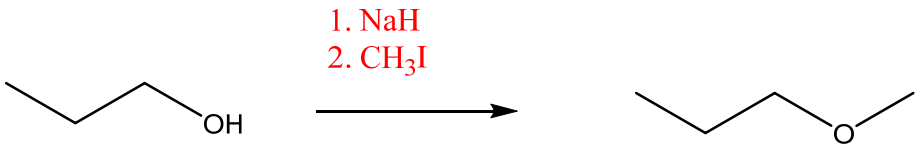
- Alcohols can be treated with strong bases to make an alkoxide ion for Sn2 or E2
- Alcohols can be treated with acids/strong Nu;- to favor Sn2 or Sn1 reactions
- Alcohols can be treated with strong, dehydrating acids to favor E1 or E2 reactions

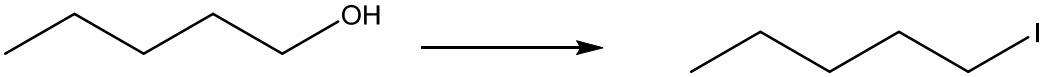
Problem 1: Provide the necessary reagents.



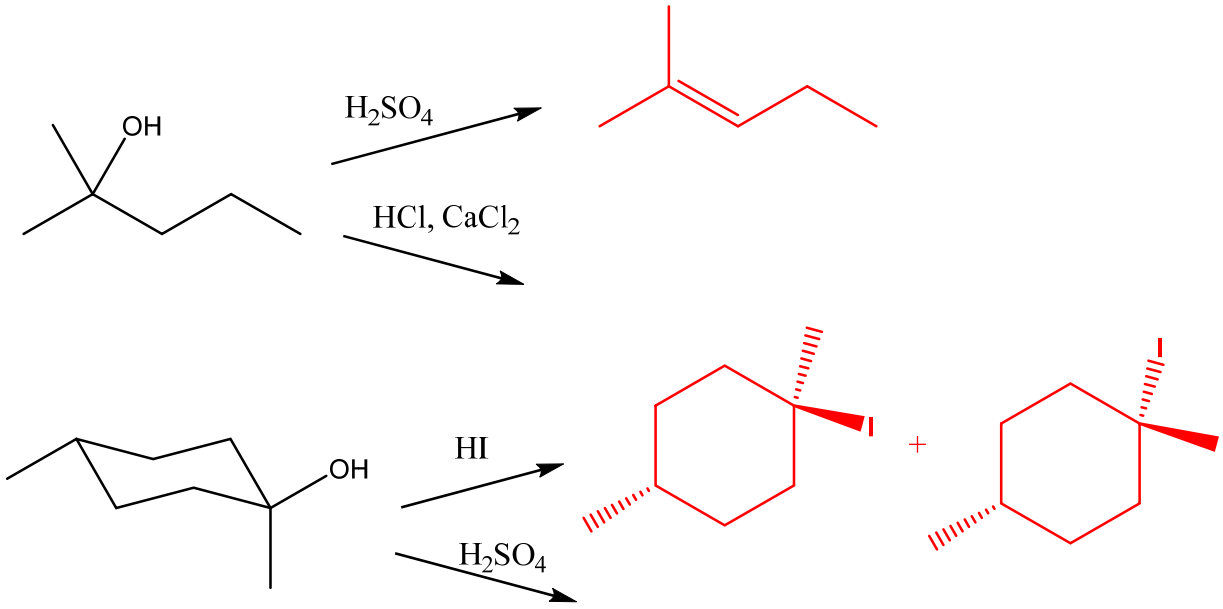


+/- 3-bromo-3-methylhexane

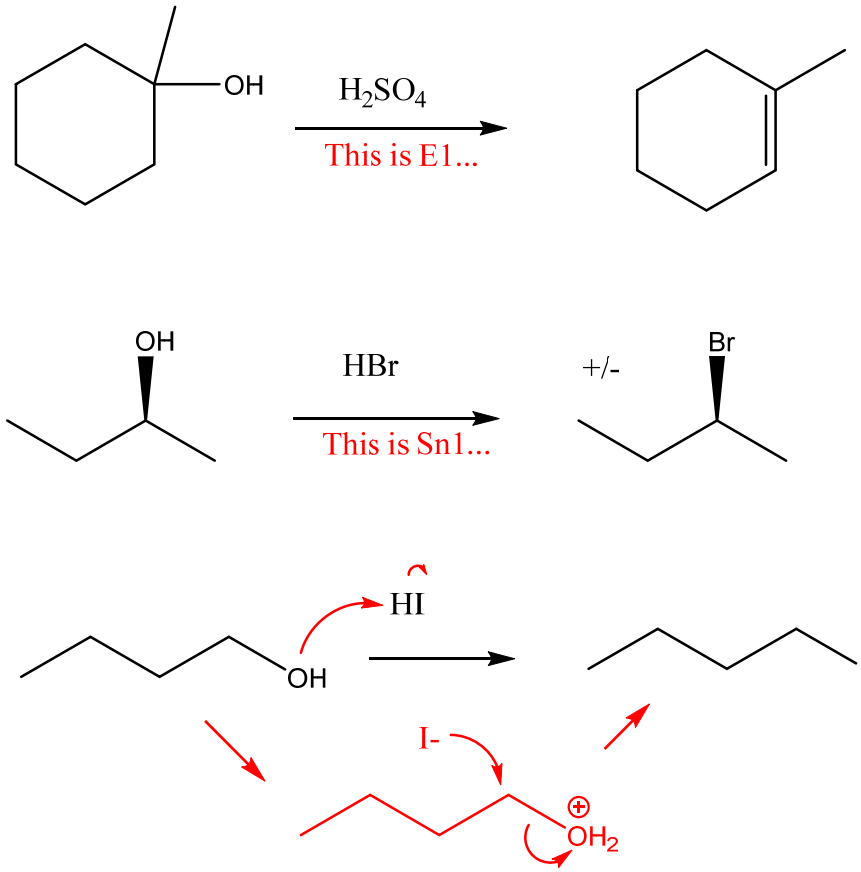




Problem 2. Predict the products of these reactions of alcohols.



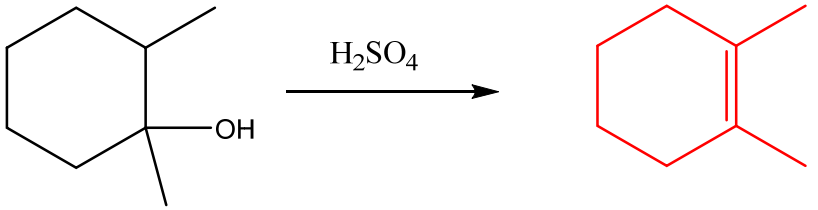
Problem 3. Provide a full arrow mechanism for each of these reactions.



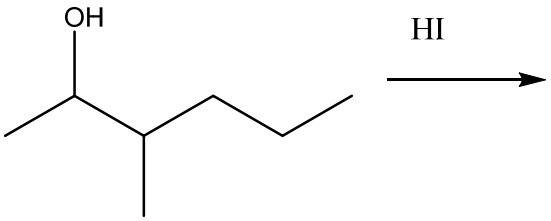
Skill 2: Carbocation rearrangements

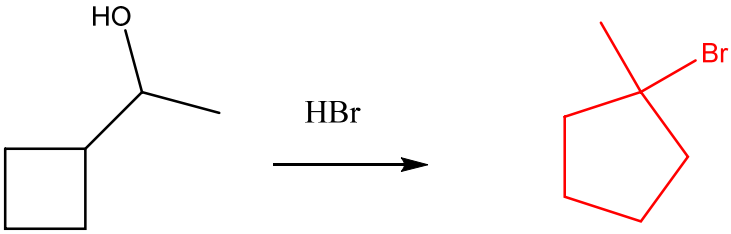
- Reactions that produce carbocations can undergo rearrangements to form more stable carbocations
- Both hydride shifts and alkyl shifts may lead to more stable carbocations
- When asked to provide a mechanism, compare the starting material and products to determine whether or not a rearrangement occurred.

Problem 4: Predict the products of each of these reactions. Indicate whether or not you would expect a rearrangement to occur.

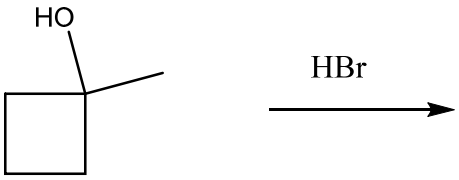


no rearrangement
(3^o carbocation forms)

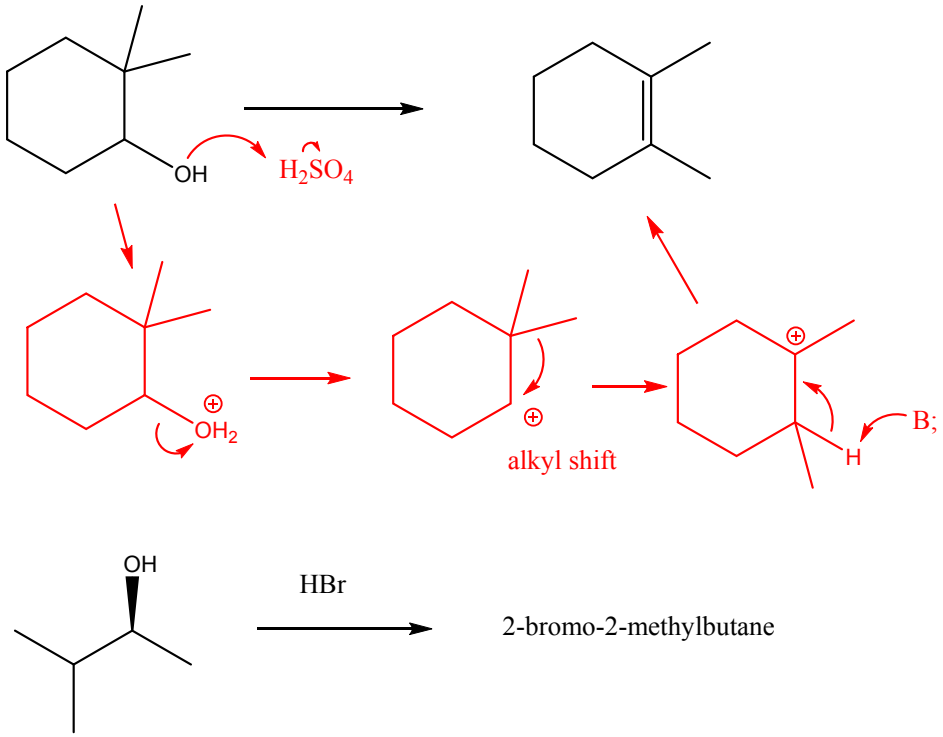




rearrangement with ring opening relieves strain



Problem 5. Provide mechanisms for these reactions.



Skill 3: Synthetically useful leaving groups

- Alcohols can be made into alkyl halides or sulfonates
- These leaving groups can then be used in substitution or elimination reactions. Synthetically useful reactions generally are Sn2 and E2.

Problem 6: Provide the necessary reagents or predict the products.